Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

It appears, then, that the character and distribution of the hanging valleys along the Merced are just the reverse of what we should expect, assuming stream erosion to be the only important factor in their formation; but accord perfectly with the theory which admits extensive glacial erosion in the headwater areas, and accelerated river erosion farther downstream. Extensive over-deepening of the Yosemite Valley by glacial erosion seems to me as necessary a conclusion as the formation of the V gorge of the lower Merced by river erosion. Judging from the relations of the tributaries west of El Portal, from the character of the longitudinal profile of the Merced itself (described below) and from the position of the Yosemite near the headward portion of the Merced basin, I should imagine that little if any of the observed over-deepening of the Yosemite is to be charged to the acceleration of the Merced in preglacial times; and that glacial erosion is responsible for the major part of the more than two thousand feet of over-deepening observed, plus the unobserved amount concealed by alluvium on the valley floor.

(*To be concluded.*)

EXPLORATIONS IN DUTCH NEW GUINEA

Dr. Lorentz's Ascent of Wilhelmina Peak

We were almost completely ignorant of the interior of Dutch New Guinea until the explorations that were begun in 1903 by the geologist and historian, Prof. Dr. C. E. A. Wichmann. He, however, made Humboldt Bay on the north coast the chief scene of his labors. His work was followed by the South-West New Guinea Expedition in 1904-1905, led by Captains Posthumus Meyes and De Rochemont, who discovered East Bay and the North River on the south coast. Various other parties have contributed to our information; and Dr. H. A. Lorentz led expeditions into southern Dutch New Guinea in 1907 and 1909. In January and February last Dr. Lorentz gave a lecture on his last explorations before the Royal Geographical Society in London and the Scottish Geographical Society in Edinburgh, and the paper is printed both in the *Geographical Journal* for May and in the July number of the *Scottish*

Geographical Magazine. The following summary of his work in 1909 has been prepared from this paper.

In the expedition of 1909 he reached Wilhelmina Peak, though in 1907 he attained only the southern edge of the Snow Mountains, while Wilhelmina Peak is on the north side of the range. Two hundred and eighty-six years after Jan Carstensz mentioned in his journal that on Feb. 16 he saw mountains covered with snow, the Lorentz expedition reached these untrodden snows.

The members of the expedition consisted of Dr. Lorentz (leader and zoologist), Commander J. W. van Nouhuys (geology, cartography and meteorology), Surgeon v. Römer (botany, medicine and anthropology), a native physician and about 100 Dyak carriers. He was also accompanied by a small military force under command of Lieut D. Habbema. On Aug. 5, 1909, the party sailed from the port of Soerabaja, Java, and on Sept. 1, they arrived at East Bay on the south coast of New Guinea. Three large rivers, the Oetoemboewe, North and North-West, empty into this bay. It was the starting point for the interior. The field of Dr. Lorentz's work extended from the sea to Wilhelmina Peak between 138° 30′ and 138° 45′ E. Long.

The North River offered the best route for penetrating as far as the mountains. Dr. Lorentz was only twenty-two days in reaching Alkmaar at the base of the mountains, though in 1907 he had spent seventy-nine days on the way. On Oct. 4, the expedition was assembled at Alkmaar, where provisions were stored for 100 days. Here, on Oct. 27, the tramp over the mountains to Wilhelmina Peak began.

Although Wilhelmina Peak is only about thirty-five miles from Alkmaar, the difficulties of the route were so formidable that it seemed likely at times that the expedition would not reach the goal. On the way, the party met the mountain Papuans, who proved to be an interesting people, and it was not difficult to establish friendly relations with them. As the ascent of the mountains proceeded, the weather became very bad, the temperature was low and continuous fog made it difficult to see the route. The summit was finally reached on Nov. 8. It was impossible to climb the steep wall of rock leading to the peak, but a crevice was finally discovered in the wall through which the explorers forced their way upward. They followed the top of the wall to the summit of the mountain, which is crowned with eternal snow. The hypsometer registered 15,125 ft. The height of Mont Blanc is 15,750 ft. To the north they had an uninterrupted view, for only low mountains stretched to the horizon. A lake down in the plain below them was named after Lieut. Habbema. The conjectured elevation of this lake is 11,800 feet.

The retreat back to the sea was most exciting and unfortunate. Dr. Lorentz fell into an abyss and was found in a swoon with a broken rib and bruised limbs. A series of misadventures accompanied the party as far as Alkmaar. They were overwhelmed with snow, a number of the men were badly frost-bitten and the party nearly starved. On Dec. 15, they finally arrived at Alkmaar after an absence of sixty-eight days in the primeval mountain forest. The remainder of the journey to the sea was easy.

The expedition secured more proofs, relating especially to the fishes found in the river, that New Guinea belongs to Australia. The botanical results prove that in New Guinea transitions may be found from the genuine tropical to the Alpine flora. The majority of plants have, however, a Malayan character, but there are such a large number of endemic forms that New Guinea and the adjacent islands can be separated from the Sunda Islands as a dominion in itself (Papuasia). On the south coast there are extensive marsh woods, like those found in India. Where the soil is more solid, savannahs were found here and there covered with acacia and other intruders from north Australia. The Alpine flora has a northern character unlike the Australian flora. It resembles that of the mountains of Java, Sumatra and the Himalayas (Rhododendron, Ericaceae, Viola, etc.).

"The south coast consists of a large alluvial plain, sometimes miles in width, cut by a great number of rivers which drain it and bring its abundant waters to the sea. The trend of the hills and mountains is principally east-west, which causes great trouble to explorers, as the ridges cannot be followed, but always have to be crossed. During the expeditions of 1907 and 1909 eruptive rocks were not found. The mountains crossed proved to be of recent formation. The Wilhelmina Peak consists of alveoline limestone. Eruptive rocks have been found near Geelvink Bay. The Wichmann Mountains [about 13 miles S. of Wilhelmina Peak] consist partially of sandstone. Concerning the snow, I may mention that we did not meet with real glaciers—the heat of the tropical sun must prevent their formation—but we found many traces that they have existed. We saw on the top of the Wilhelmina Peak the so-called *firn*.

"A distinction must be made between the Papuans living in the plains near the river and those in the mountains. The river Papuans live chiefly on sago and bananas, and have as animal food, hogs, fish, kangaroos, cassowaries, etc. As sago does not grow in the mountains, these Papuans eat principally yams and bananas, and also hogs, rats, and mice. Both of these tribes live in a typical Stone Age. Their arms are bow and arrows, spear, club and stone axe. Their arrows are not poisoned. None of them wear any clothing; not even the people who live above 10,000 feet. It is remarkable that they do not know the use of bark. I am not convinced that they are cannibals. I collected about eighty human skulls, and on asking a native where the remaining portions of the skeletons were, he gave me to understand that they were eaten. It is possible that he misunderstood me; still those skulls are valuable from an anthropological point of view, as we can be sure that they belong to a race which is free from mixture with other races. Besides their weapons, they never go out without their bag, containing tools for daily use. They give evidence of great skill in making their canoes with stone axes. I happened to be in their village when they were busy with their work and they soon understood the superiority of iron tools."

Captain Rawling's Explorations

The British Ornithologists' Union decided in 1908 to send an expedition to southern Dutch New Guinea to make a collection of its fauna and flora for the British Museum. The immediate goal was the great central Snow Range. Mr. W. Goodfellow, a well-known ornithologist, was appointed leader, botanists and collectors were chosen, and Capt. C. G. Rawling, whose notable surveys and map work in western and southern Tibet have made him well-known, represented the Royal Geographical Society and had charge of the geographical explorations. The following short account of Capt. Rawling's work is condensed from his paper "Explorations in Dutch New Guinea" published in the *Geographical Journal* (Sept. 1911, pp. 233-255, map and ills). The expedition left England in October, 1909, and reached the mouth of the Mimika River, on the south coast of the island (136° 29′ E. Long.), early in 1910. Capt. Rawling's explorations, to some extent, supplemented the work of Dr. Lorentz, though their fields were not contiguous. The work of both expeditions extended from the south coast to the central mountains, Lorentz crossing them while Rawling reached their southern edge. The eastern limit of the geographical work of Capt. Rawling was about 100 statute miles west of the western limit of Dr. Lorentz's explorations.

At the mouth of the Mimika River the ship lay three miles out to sea in four fathoms of water. Rawling with two men started in the launch to explore the Mimika River, which is 1,500 yards wide at its mouth. At the third mile they found a great river entering from the west which the natives called the Watuka. It supplies two-thirds of the water reaching the sea and its discovery was a surprise, for Dutch explorers of the lower Mimika, a few years ago, made no reference to the Watuka of which the Mimika is only a tributary.

Crowds of Papuans, men, women and children, put out from the river banks in canoes, shouting a welcome. The village of Wakatimi, on the right bank of the Mimika, about four miles above its confluence with the Watuka, consists of a long row of about 150 huts built of pandanus and palm leaves with a row of cocoanut trees in front. The women had disappeared, but crowds of men pressed around to gaze upon the strange creatures who had entered their country. The Mimika coast native, almost coal black in color and rather taller than the average European, is physically an almost perfect man, but his brutal features make him very unattractive. The women have little time to think of anything but work. Slaves from childhood, working from daybreak till long after dark in the search for food and to make the man, their master, happy, they rapidly become old, haggard and hideous. No signs of cannibalism were seen.

The natives willingly sold canoes for the ascent of the Mimika. The favorite canoe in these parts is between fifty and sixty feet long, taken from one tree trunk and hollowed by stone axes, fire or old pieces of iron obtained in coastal trading. The labor of making and launching these canoes is enormous. The tree must first be cut down, and as suitable trees are rarely found close to the river bank, a clearing in the forest is made and the great log is dragged to the launching place by the combined strength of the whole village. The hollowing, finishing and decorating are done at the village, the whole process often taking many weeks and even months.

Ascending the Mimika, the furthest navigable point at the village of Parimau was reached on the seventh day out. The ascent was very difficult. One day the river was a swollen torrent, the next a series of pools divided by banks of soft mud, or tangled masses of tree trunks, and over or through these obstructions the heavy laden canoes had to be hauled. When in flood, no bottom could be found with the poles; at low river there was insufficient water to float the canoes. On both banks grew the densest vegetation. Mighty trees fought for existence with thousands of younger growth, the whole held together by a tangled mass of rattan and other creepers.

From Parimau, Rawling and three comrades traveled to the north-north-west to the Kaparé River, seven miles from the mountains. This was believed to be the best route to the mountain region, but as the carriers refused to go further, the party was compelled to return on the third day. As the Kaparé was here 200 yards in width, with great forests and mountains close at hand and the mighty precipice beyond, it was still thought that this route would be best for a forward advance; so Rawling remained to clear the route while Goodfellow returned to Wakatimi to send a party up the Watuka, which was believed, and afterwards proved, to be the lower course of the Kaparé. Thus it resulted that both the Mimika and the Watuka-Kaparé Rivers were explored.

All attempts to get far up into the mountains failed on account of the tremendous difficulties of the advance, the desertion of the native helpers, the inadequacy of supplies, the decimation of the force of carriers by disease, etc. The explorers, however, cleared an area of forest land at Parimau, from which they had a fine view of the mountains.

> "It was easy to fix all the points in the range from Carstensz in the east to Mt. Leonard Darwin in the west. The height of Carstensz, formerly assumed to be about 18,000 feet, was found to be nearly 16,000 feet, while to the west three more great snow peaks were discovered with a height of about 15,400 feet; these we named Mt. Idenburg, after the present Governor-General of the Netherlands India. . . . Beyond and between these two mountains two other great snow peaks were visible, evidence that the ground to the north does not fall abruptly away. But more interesting than all was the discovery that the great range stretching from Carstensz in the east to the Charles Louis Mountains in the west, a distance of eighty miles, formed one immense, unbroken precipice, culminating in its greatest sheer height at Mt. Leonard Darwin (named after the late President of the Royal Geographical Society). We were never in a position to measure with the theodolite a greater sheer height of more than 6,500 feet, but from many views obtained while climbing, I have no hesitation in stating that the greatest perpendicular height is, at this spot, not less than 10,500 feet, or two miles. To the west of Mt. Darwin the range continues to diminish, the precipice dwindling in proportion. To the eye this wall of limestone rock, though split into many sections, appears quite impregnable, a perpendicular wall of dead black stone, relieved by splashes of white where the water catches the rays of the sun."

For seventeen miles to the south of the precipice are two ranges of hills, of an average altitude of 8,000 feet, cut by the great rivers flowing from the north and worn into fantastic shapes. These lower ranges are covered with dense vegetation, the high range behind being bare and barren. The snow line is at about 14,500 feet, the glaciers on Carstensz Peak descending lower and falling over the precipice to the south. Capt. Rawling shares the view of Lieut. Postema of the Dutch navy that Carstensz Peak is not climbable. The wetness of this district is doubtless due to the high altitude and proximity of these mountains, the rainfall being in excess of that in any other part of New Guinea.

Capt. Rawling gives a description of the appearance of these great mountains as seen from the deck of an ocean steamer, moving east along the south coast of Dutch New Guinea:

> "We were rapidly approaching a great bluff, the south end of the Charles Louis Range. Changing course eastwards, the whole range of snow-capped mountains was unfolded to our view as the morning mists dispersed. Stretch-

> ing in one unbroken line, from the Charles Louis Range on the west to the Orange Range on the east, lay what was then known as the Snowy Range, but which her Majesty the Queen of the Netherlands has been graciously pleased to allow me to name the Nassau Range. Rising to its greatest height in the east at Carstensz Peak, seen by a Dutch Captain of that name in 1623, it runs nearly level for sixty miles to the west, the snows giving place to a mighty precipice, and then gradually falling away to the dividing valley before the Charles Louis Range is met. In front and barring our approach lay range upon range of knife-edged ridges and forest clad mountains broken into sections where cut by the rivers flowing from the north. For fifty miles from the coast lies a dense forest-covered swamp in no spot rising more than a few feet above sea level."

While defeated in their efforts to ascend into the mountains, the expedition succeeded in exploring an important number of rivers, including, besides those already named, the Tuaba, the Kamura and the Wataikwa. The explorations in the lower plain extended for about forty miles east and west between the sea and the mountains. Swamps, jungle or impassable forest cover nearly all the region between the watercourses. The floods of 1910 were probably exceptionally great. The lowlands were almost impassable. The casualties from death and sickness in the expedition were truly appalling. During the first year twelve per cent. of the total force died. Of 300 men employed during the first twelve months only eleven lasted out the expedition, and of these four were Europeans.

On the Upper Kaparé River, Rawling first met the pygmies. These little folk showed no active hostility, but evidently did not desire the white men's company. Their habitations were not seen, but where they were met they had cleared an area of about 120 acres, on which they grew taro and sweet potato. Nine months later Rawling had a better opportunity to study the pygmies at one of their villages. Some forty men or more appeared, but although large bribes were offered for the sight of a woman, none put in an appearance, and their fires that night showed them encamped high up the mountain side. No pygmy woman was ever seen by the expedition, the men refusing to exhibit their wives, even though tempted with the unheard-of price of two axes a woman. Prof. A. C. Haddon, the well-known anthropologist, is inclined to believe that the New Guinea plainsman and the pygmy are of the same aboriginal stock, and that the stronger members of the tribe having seized those districts where food is most abundant, have developed proportionately; while the weaker are not degenerate, but are the true representatives of the original race. In some ways the pygmy seems to be more intelligent than his lowland neighbor. He builds his house on piles and for permanent use. He uses numerals up to ten, while the plainsman has words for only one and two, any numeral above these being shown by the fingers and toes. The pygmies are the keenest of traders and were willing to exchange everything they possessed, excepting their best arrows, for cloth or a knife.

The expedition lived for over a year among the Papuans of this region and obtained some insight into many of their customs. Marriage is of little importance and was witnessed only on one occasion, when the men who had escorted a bride up a river betook themselves to their homes, while the bride, preceded by an old woman crawled through the mud on her hands and knees and in this degraded position disappeared into her future home. When a person dies the whole population break into a loud wail, and all smear themselves from head to foot with mud. The amount of howling depends upon the importance of the deceased person and is incessant until the corpse is buried. The explorers were surprised by the richness and variety of the singing and chanting. An impromptu song is devised, and the vocalist, bedecked in plumes from the greater bird of paradise, is accompanied by an orchestra of drums, the chorus ending in a shout resembling the bark of a dog and given in unison. These concerts occur on all festive occasions.

Summing up the final results of the expedition Capt. Rawling says:

> "Large and valuable collections of birds, mammals, reptiles, butterflies and moths had been formed together with botanical and ethnographical specimens; a new and unknown race of pygmies discovered, studied, measured, and photographed; a range of mountains, containing the greatest precipice in the world; together with 3,000 square miles of country, surveyed and mapped, new snow-mountains found, and many great rivers explored; and a long stretch of coast-line surveyed. We had accomplished the longest cross-country journey ever undertaken in Dutch New Guinea, *i. e.*, eleven marches from the up-river camp, had proved the impossibility of the Mimika river as a line of advance to the Snows, and on the other hand the value of the great rivers to the east if the same goal is intended. From experience, and our heavy death-roll will bear me out, I have no hesitation in saying, firstly, that the land is an impossible one to any but a Papuan; and secondly, that, unless most carefully picked, no native of the East Indies, with the exception of the Dyaks from Borneo, are of the slightest value as carriers in South Dutch New Guinea."